

ARMORCOTE®

961 Series

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Description

Products in the ARMORCOTE® 961 Series Gel Coats are advanced technology polyesters developed for lower emissions, improved flexibility, and superior weathering resistance to surface yellowing and chalking. ARMORCOTE® gel coats offer the following benefits as compared to ArmorFlex®:

- Better weathering
- Better blister resistance
- Easier processing (less sticky)
- Easier sprayability.

These products are designed to meet the critical requirements of the marine industry. Both accelerated and 45-South-Florida-exposure testing reveal less yellowing than standard gel coats, and considerably less loss of gloss.

These gel coats meet the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for Boat Manufacturers. Certain specific white gel coat products may not meet the NESHAP standard for Reinforced Plastics. If in doubt, review the Material Safety Data Sheets, or contact a CCP representative.

These ARMORCOTE® gel coats offer blister resistance comparable to ISO/NPG gel coats.

This coating system is sag resistant and ready to spray, requiring only the proper addition of an appropriate methyl ethyl ketone peroxide to cure.

The product code for Base White in the improved 961 Series is 961WJ840.

Typical Liquid Properties (at 77F)

These values may or may not be manufacturing control criteria; they are listed for a reference guide only. Particular batches will not conform exactly to the numbers listed because storage conditions, temperature changes, age, testing equipment (type and procedure) can each have a significant effect on the test results. Batches with properties outside of these ranges can perform acceptably.

Test	Value
Viscosity, Brookfield RVF #4 Spindle @ 4 rpm	13,000 – 19,000 cps
Thixotropic Index	4.5 – 6.5
Flash Point	79°F



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Hazardous Air Pollutants	Refer to MSDS
Weight per Gallon (Pigmented)	11.2 (white)
Gel Time at 77°F with 1.8% DDM-9	10 – 18 minutes
Lay-up Time at 77°F with 1.8% DDM-9	45 – 90 minutes, depending on gel time
Sag Resistance	24 mils wet
Hide (Most Formulations)	Complete at 10 mils wet

Reds, yellows and dark blues may have low hiding power. Ask a CCP representative whether the selected red, yellow or blue requires a special application procedure, which is increased film thickness in multiple cured applications.

Refer to the MSDS for handling precautions. MSDS's will be supplied automatically with the first order for material, and are available by product code upon request from CCP's Regulatory Department, or at www.ccpcompositesus.com.

Application

Although products in the 961 series are formulated as low VOC products, it should be noted that over-atomization of a gel coat results in more volatilization (more overspray, more monomer and solids loss, more odor). It is important therefore to strive for good atomization (good fan pattern, no fingers or tails, uniform particle size of about 1/16 inch) while maintaining lowest pump and atomizing pressures as practical.

ARMORCOTE® can be applied with air-atomized or airless equipment. Brushing or rolling is not recommended. Refer to CCP's *Composites Application Guide* (10th Edition), Part Four, Chapter II--Conventional Gel Coat, Part II.3 Spray Equipment for equipment recommendations. Such a high performance coating requires careful application procedures; poor application will quickly negate the beneficial properties. Refer to Part Four, Chapter II--Conventional Gel Coat, Part II.4 Application of CCP's Composites Application Guide (10th Edition).

For optimum results, uniform catalyst mix must be achieved. Even with the equipment properly calibrated, potential problems can occur due to: poorly atomized catalyst, surging problems (ARMORCOTE® or catalyst), poor tip alignment (catalyst to ARMORCOTE® mix), contamination, and poor application procedures, which will quickly negate all benefits of calibration. The equipment (and application procedures) must be monitored on a routine basis to ensure proper application and cure of the gel coat. Ask about and adhere to all equipment manufacturers' recommendations.

A delivery rate of no more than 2.5 pounds per minute with conventional air-atomized equipment and no less than 60 psi atomizing air (dynamic) at the gun is essential. Use no more than 4 pounds per minute with airless equipment. High flow rates cannot be properly achieved using air-assist airless equipment. Attempts to use flow rates over 3 pounds per minute may result in poor application. These products require a closer control of application procedure than gel coats.

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Products in the 961 series are lower in viscosity and are easier to pump and spray. Slightly lower pumping pressures and atomizing air pressures are normally required than are necessary for regular gel coats, and other low VOC gel coats.

Careful application procedures must be taken. A spray distance of 24 to 36 inches is recommended for airless equipment. A spray distance of 18 to 24 inches is recommended for either conventional or air-assist airless equipment. In either case, a spray distance greater than 4 feet will increase the chances for poor leveling and porosity.

Avoid over spray settling on mold surfaces by beginning spray pattern closest to the vapor/air exhaust and progressing to the opposite mold end. Maintain recommended spray distances from the mold surface.

For deep channels, recessed, and hard-to-spray areas, an extension nozzle is highly recommended.

For best overall performance properties, a wet film thickness of 18 ± 2 mils is recommended as ideal. Films less than 12 mils may not cure properly, may be hard to patch, have more print-through, and are more susceptible to water blisters. Films above 24 mils may pre-release, trap porosity, or crack, and are more subject to weathering discoloration. If water blisters are of a great concern (boat hulls), 20 to 24 mils would perform better than a thinner film, but resistance to sag, porosity and cracking could suffer. If weathering (yellowing from sunlight, decks) is of great concern, then thinner films (12 to 16 mils) would perform better, but patchability and resistance to print-through and blistering could suffer.

A fiberglass part is the mirror image of its mold. A preventive maintenance program for molds is essential. This will minimize the repair work (sanding and buffing) needed on the fiberglass parts. Sanding and buffing can reduce durability of a part by 30 to 50%.

Delamination can occur if the gel coat is left in the mold overnight without being laminated. It is essential that the gel coat at least be skinned within 8 hours of being sprayed.

Cure

It is recommended that gel time be checked in the customer's plant because age, temperature, humidity and catalyst will produce varied gel times. All data referencing gel or cure refers specifically to Arkema Luperox[®] DDM-9 catalyst. Norac NOROX MEKP-9 and NOROX MEKP-9H, Akzo Nobel CADOX L-50a and CADOX D-50 are expected to yield similar performance. Arkema Luperox[®] DHD-9, NOROX MEKP-925 and NOROX MEKP-925H, and Chemtura HP-90 may yield slightly shorter gel and cure times.

The catalyst level should not exceed 3% or fall below 1.2% for proper cure. Recommended range is 1.2% to 3.0% with 1.8% at 77°F being ideal. Normally, the film is ready for lamination in 45 to 90 minutes. This time element is dependent on material temperature, room temperature, humidity, air movement, and catalyst concentration.

This product should not be used when mold and ambient temperature conditions are below 60°F, as curing may be adversely affected. Material temperature should be at least 70°F.

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Caution

ARMORCOTE® products are not compatible in the liquid state with gel coats or resins; separation can occur. Spray and pumping equipment must be completely clean of gel coats or resin.

Do not overmix. Overmixing breaks down viscosity, increasing tendencies to sag, and causes styrene loss, which could contribute to porosity. ARMORCOTE® should be mixed once a day for 10 minutes. The ARMORCOTE® should be mixing to the sides and bottoms of the container with the least amount of turbulence possible. Air bubbling should not be used for mixing. It is not effective and only serves as a potential for water or oil contamination.

Do not add any material other than the appropriate methyl ethyl ketone peroxide to this product without the advice of a representative of CCP Composites US.

Storage Limitations

Uncatalyzed ARMORCOTE® has a usage life of 90 days from date of shipment when stored at 73°F or below, in a closed, factory-sealed, opaque container, and out of direct sunlight. The usage life is cut in half for every 20°F over 73°F. Totes of product can have even shorter usage life—66% of that for drums.

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**CCP COMPOSITES US
WARRANTIES, DISCLAIMERS AND LIMITATION OF LIABILITY (Rev. 10/11)**

Seller warrants that: (i) Buyer shall obtain good title to the product sold hereunder, (ii) at Shipment such product shall conform to Seller's specifications; and (iii) the sale or use of such product will not infringe the claims of any U.S. patent covering the product itself, but Seller does not warrant against infringement which might arise by the use of said product in any combination with other products or arising in the operation of any process. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO SELLER. ANY APPLICATION INFORMATION OR ASSISTANCE WHICH SELLER MAY FURNISH TO BUYER IS GRATUITOUS AND SHALL IN NO WAY BE DEEMED PART OF THE SALE OF PRODUCT HEREUNDER OR A WARRANTY OF THE RESULTS OBTAINED THROUGH THE USE OF SUCH PRODUCT.**

Without limiting the generality of the foregoing, if any product fails to meet warranties mentioned above, Seller shall at Seller's option either replace the nonconforming product at no cost to Buyer or refund the Buyer the purchase price thereof. The foregoing is Buyer's sole and exclusive remedy for failure of Seller to deliver or supply product that meets the foregoing warranties. Seller's liability with respect to this contract and the product purchased under it shall not exceed the purchase price of the portion of such product as to which such liability arises. Seller shall not be liable for any injury, loss or damage, resulting from the handling or use of the product shipped hereunder whether in the manufacturing process or otherwise. In no event shall Seller be liable for special, incidental or consequential damages, including without limitations loss of profits, capital or business opportunity, downtime costs, or claims of customers or employees of Buyer. Failure to give Seller notice of any claim within thirty (30) days of shipment of the product concerned shall constitute a waiver of such claim by Buyer. Any product credit received by Buyer hereunder, if not used, shall automatically expire one (1) year from the date the credit was granted. Notwithstanding any applicable statute of limitations to the contrary, any action by Buyer relation to a claim hereunder must be instituted no later than two (2) years after the occurrence of the event upon which the claim is based. All the foregoing limitations shall apply irrespective of whether Buyer's claim is based upon breach of contract, breach of warranty, negligence, strict liability, or any other legal theory.

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COMPOSITES SAFETY INFORMATION (October 2011)

All sales of products manufactured by CCP Composites US (CCP), and described herein, are made solely on condition that CCP's customers comply with applicable health and safety laws, regulations and orders relating to the handling of our products in the workplace. Before using, read the following information, and both the product label, and Material Safety Data Sheet pertaining to each product.

Most products contain styrene. Styrene can cause eye, skin and respiratory tract irritation. Avoid contact with eyes, skin and clothing. Impermeable gloves, safety eyewear and protective clothing should be worn during use to avoid skin and eye contact. Wash thoroughly after use.

Styrene is a solvent and may be harmful if inhaled. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Extended exposure to styrene at concentrations above the recommended exposure limits may cause central nervous system depression causing dizziness, headaches or nausea and, if overexposure is continued indefinitely, loss of consciousness, liver and kidney damage.

Do not ingest or breathe vapor, spray mists or dusts caused by applying, sanding, grinding and sawing products. Wear an appropriate NIOSH/MSHA approved and properly fitted respirator during application and use of these products until vapors, mists and dusts are exhausted, unless air monitoring demonstrates vapors, mists and dusts are below applicable exposure limits. Follow respirator manufacturer's directions for respirator use.

The International Agency for Research on Cancer (IARC) reclassified styrene as Group 2B, "possibly carcinogenic to humans." This revised classification was not based on new health data relating to either humans or animals, but on a change in the IARC classification system. The Styrene Information and Research Center does not agree with the reclassification and published the following statement: Recently published studies tracing 50,000 workers exposed to high occupational levels of styrene over a period of 45 years showed no association between styrene and cancer, no increase in cancer among styrene workers (as opposed to the average among all workers), and no increase in mortality related to styrene.

Styrene is classified by OSHA and the Department of Transportation as a flammable liquid. Flammable products should be kept away from heat, sparks, and flame. Lighting and other electrical systems in the work place should be vapor-proof and protected from breakage.

Vapors from styrene may cause flash fire. Styrene vapors are heavier than air and may concentrate in the lower levels of molds and the work area. General clean air dilution or local exhaust ventilation should be provided in volume and pattern to keep vapors well below the lower explosion limit and all air contaminants (vapor, mists and dusts) below the current permissible exposure limits in the mixing, application, curing and repair areas.

Some products may contain additional hazardous ingredients. To determine the hazardous ingredients present, their applicable exposure limits and other safety information, read the Material Safety Data Sheet for each product (identified by product number) before using. If unavailable, these can be obtained, free of charge, from your CCP representative or from: CCP Composites US, P.O. Box 419389, Kansas City, MO 64141-6389; 816-391-6053.

FIRST AID: In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If affected by inhalation of vapors or spray mist, remove to fresh air. If swallowed, get medical attention.

Those products have at least two components that must be mixed before use. Any mixture of components will have hazards of all components. Before opening the packages read all warning labels. Observe all precautions.

Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations. Emptied containers may retain hazardous residue. Do not cut, puncture or weld on or near these containers. Follow container label warnings until containers are thoroughly cleaned or destroyed.

FOR INDUSTRIAL USE AND PROFESSIONAL APPLICATION ONLY. KEEP OUT OF REACH OF CHILDREN.